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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,573	06/17/2005	Grant Berent Jacobsen	01435-0211	4510

22852 7590 01/03/2008  
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WASHINGTON, DC 20001-4413

EXAMINER
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RABAGO, ROBERTO

ART UNIT	PAPER NUMBER
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1796

MAIL DATE	DELIVERY MODE
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01/03/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/539,573

Applicant(s)

JACOBSEN ET AL.

Examiner

Roberto Rábago

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☒ Claim(s) 16 and 18-20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/17/2007 has been entered.

### ***Claim Objections***

2. Claims 16, 18, 19 and 20 are objected to.

(a) In claim 16, line 3, "present" should be "presence".

(b) In each of claims 18 and 19, "any of" should be deleted because these claims are no longer multiply dependent.

(c) In claim 20, line 4 includes an improper period prior to the end of the claim

### ***Claim Rejections - 35 USC § 102 and/or 103***

3. Claims 1-6, 8-18, 20 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Matsushita et al. (US 6,812,303).

The reference discloses in Example 2 a catalyst comprising calcined silica, first treated with triethylaluminum, then with trimethylaluminum, then with a borate activator

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comprising active hydrogen and additional trimethylaluminum, and then with a metallocene within the scope of claim 8. The catalyst is then used for copolymerization of ethylene with 1-butene. Claim 9 is included in this rejection with the assumption that the borates disclosed in the reference are within the meaning of "borane." The art is ambiguous regarding whether a borane includes tetravalent boron anions. Some workers describe such anions as boranes, while others limit boranes to trivalent uncharged boron compounds. Absent a clear distinction in applicants' specification, the borates disclosed in the reference are deemed to be within the meaning of a borane.

Missing from the reference is a measurement of the MWD and melt strength of claim 20; however, these properties would appear to be inherent because applicants have claimed broad ranges of conventional values expected for polyethylene polymers made using metallocene catalysts. The burden of proof is shifted to applicants to show that the reference product would not have the claimed unreported properties.

4. Claims 1-6, 9, 15-18, 20 and 21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Chang (US 5,006,500).

The reference discloses in Examples 1-3 and 8 the preparation of a supported metallocene catalyst, and use thereof in olefin polymerization. The process of making the catalyst requires pretreating a water-containing silica with TiBAI and TMA, whereupon the two aluminum alkyl compounds react with adsorbed water to chemically

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dehydrate the silica, which then forms the aluminoxane activator (c), followed by contact with a metallocene (b).

Missing from the reference is a measurement of the MWD and melt strength of claim 20; however, these properties would appear to be inherent because applicants have claimed broad ranges of conventional values expected for polyethylene polymers made using metallocene catalysts. Also missing from the reference process is a recommendation to use a separate or sequential method of contacting the two organoaluminum compounds with the support. However, there is no basis to conclude that this feature would exclude the reference product, particularly considering the broad scope and open-ended nature of the process steps. If any differences can be shown, they would be minor and obvious. The burden of proof is shifted to applicants to show that the reference product is outside the claimed scope.

Applicant's arguments filed 9/17/2007 have been fully considered but they are not persuasive. The amendment has included within product-by-process claims 1 and 21 the additional process step wherein, at some point in its history prior to contact with the organoaluminum compounds, the support material is "dehydrated," which applicants' specification defines as being "substantially free of water" (see specification at page 3, lines 17-18). However, the claims do not exclude the reference support described in the previously cited examples because no specific upper limit of water content is required for either the dehydration step or the contacting step. Without any basis for a narrower definition, "substantially free of water" is understood to mean "mostly free of water," and therefore the reference supports which contain a minor percentage of water are within

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the claimed scope. Further regarding claim 1 (and claims dependent thereon), these claims are open-ended regarding additional process features, and therefore even if applicants could successfully argue that the reference support was not "substantially free of water," the claims allow for additional unrecited steps which may increase the water content of the support prior to contact with the organoaluminum compounds. Therefore, claim 1 (and claims dependent thereon) are entirely unlimited regarding the amount of water which may be present in/on the support at the time of contacting with the organoaluminum compounds.

5. Claims 1-3, 5, 6, 9, 13-18 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tsuie et al. (US 2003/0195306).

The reference discloses in Examples 7-11 making a catalyst comprising supporting MAO on calcined silica, followed by contact with zirconocene, then with tris(pfp)borane and additional MAO. As is well known in the art, MAO is a mixture of cyclic and linear oligomers having R-Al-O units (see, for example, col. 5, lines 6-18 of US 5,006,500). Furthermore, low concentrations of trialkylaluminum starting materials are also expected to be present within an MAO mixture. Therefore, the inherent compositional mixture of MAO is within the scope of "at least two different organoaluminum compounds". The reference further describes olefin polymerization in Examples 14-21. Missing from the reference is a measurement of the melt strength of claim 20; however, this property would appear to be inherent because applicants have

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claimed broad ranges of conventional values expected for polyethylene polymers made using metallocene catalysts. Also missing from the reference process is a recommendation to use a separate or sequential method of contacting the two organoaluminum compounds with the support. However, there is no basis to conclude that this feature would exclude the reference product, particularly considering the broad scope and open-ended nature of the process steps. If any differences can be shown, they would be minor and obvious. The burden of proof is shifted to applicants to show that the reference product is outside the claimed scope.

Applicant's arguments filed 9/17/2007 have been fully considered but they are not persuasive. Applicants argue that the reference fails to describe silica treated separately with two different and separate organoaluminum compounds. However, as stated above, the record contains no basis to conclude that separately contacting the two organoaluminum compounds with the silica would exclude the reference catalyst from the claimed scope.

6. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsushita et al. (US 6,812,303).

The parent claim is discussed with respect this reference above. Missing from the cited example is a recommendation to use fluidized bed conditions. However, one of ordinary skill in the art would be motivated to use such systems because the reference suggests gas phase polymerization col. 35, lines 59-61. A fluidized bed reactor would be an obvious selection from the suggestion to use gas phase conditions

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because fluidized bed reactors are among the most commonly used gas phase systems for olefin polymerization.

7. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (US 5,006,500).

The parent claim is discussed with respect this reference above. Missing from the examples is a recommendation to use fluidized bed conditions. However, one of ordinary skill in the art would be motivated to use such systems because the reference suggests gas phase polymerization col. 4, lines 26-31. A fluidized bed reactor would be an obvious selection from the suggestion to use gas phase conditions because fluidized bed reactors are among the most commonly used gas phase systems for olefin polymerization.

8. Claims 7, 10, 11 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuie et al. (US 2003/0195306).

The parent claims are discussed with respect this reference above. Missing from the examples is a recommendation to use a group VI transition metal as required in claim 7. However, one of ordinary skill in the art would be motivated to use a metal from this group because the reference suggests them as "more preferred" metals at [0010]. Also missing from the examples is a recommendation to use the claimed ionic activator. However, one of ordinary skill in the art would be motivated to use such systems because the reference suggests such use at [0025]. Also missing from the



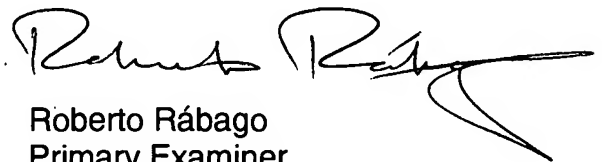
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examples is a recommendation to use fluidized bed conditions. However, one of ordinary skill in the art would be motivated to use such systems because the reference suggests gas phase polymerization [0032]. A fluidized bed reactor would be an obvious selection from the suggestion to use gas phase conditions because fluidized bed reactors are among the most commonly used gas phase systems for olefin polymerization.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberto Rábago whose telephone number is (571) 272-1109. The examiner can normally be reached on Monday - Friday from 8:00 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Roberto Rábago  
Primary Examiner  
Art Unit 1796

RR  
December 22, 2007